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Physics & Astronomy Building (PAB) 4-330

Entanglement branes in a two-dimensional string theory

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There is an emerging viewpoint that classical spacetime emerges from highly entangled states of more fundamental constituents. In the context of AdS/CFT, these fundamental constituents are strings, with a dual description as a large- N gauge theory. To understand entanglement in string theory, we consider the simpler context of two-dimensional large- N Yang-Mills theory, and its dual string theory description due to Gross and Taylor. We will show how entanglement in the gauge theory is described in terms of the string theory as thermal entropy of open strings whose endpoints are anchored on a stretched entangling surface which we call an entanglement brane.